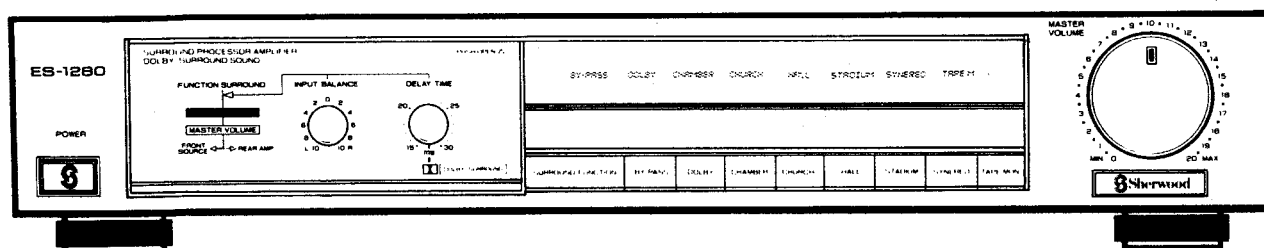


SERVICE MANUAL

ES-1280

SURROUND PROCESSOR AMPLIFIER



■ CONTENTS

Safety Precaution	3	Exploded View	10
Specifications	4	Electrical Parts List	12
Block Diagram	5	Mechanical Parts List	16
P.C. Boards	6	Schematic Diagram	Separate Sheet
Wiring Diagram	9		



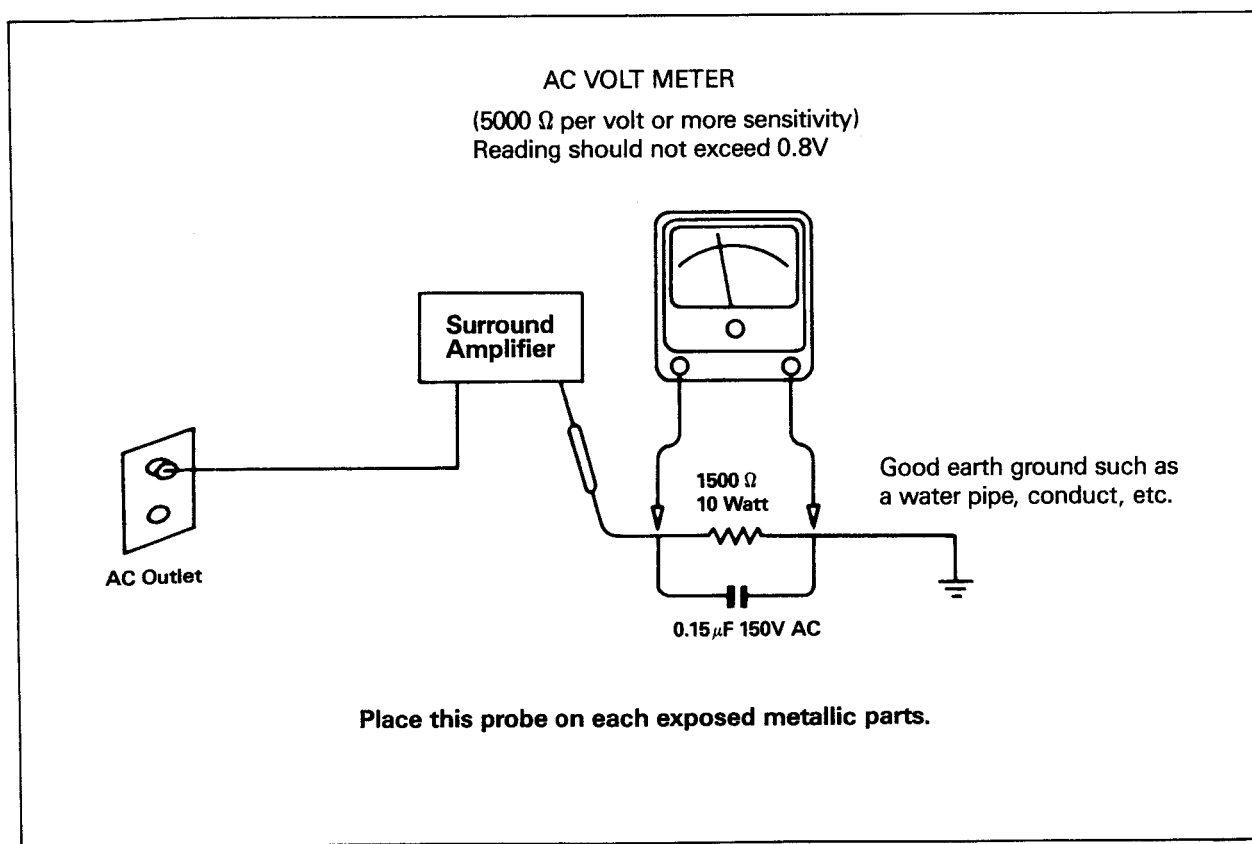
Safety Precaution

WARNING

Service should not be attempted by anyone unfamiliar with the necessary precautions on this player. The following precautions are necessary during servicing.

1. Many electrical and mechanical parts in this player have special characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements: electrical components having such features are identified by a $\triangle$ in the schematic diagram and the parts list.
Before replacing any of these components, read the parts list in this manual carefully.
The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.
2. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such

as terminals, screwheads, metal overlays, etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 120V AC outlet. (Do not use a line isolation transformer during this check.) Use an AC volt-meter having 5000 Ω per volt or more sensitivity in the following manner: Connect a 1500 Ω 10 watt resistor paralleled by a 0.15 F, 150V AC capacitor, between a known good earth ground (water pipe, conduct, etc) and the exposed metallic parts, one at a time. Measure The AC voltage across the combination of 1500 Ω resistor and 0.15 F capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.3volts RMS. This corresponds to 0.2mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



Specifications

1. Power Output/ch. min. Continuous average at 1kHz with no more than 0.3% THD into 8Ω	15W
2. Inter Modulation Distortion (60Hz:7kHz=4:1) at 8Ω 15 watts	0.2%
3. Input Sensitivity at 8Ω 15 watts 1kHz line in	150mV
4. Damping Factor.....	50
5. Signal to noise ratio (A network WTD/UNWTD)	
Stadium	56/55dB
Hall	56/55dB
*Dolby	56/55dB

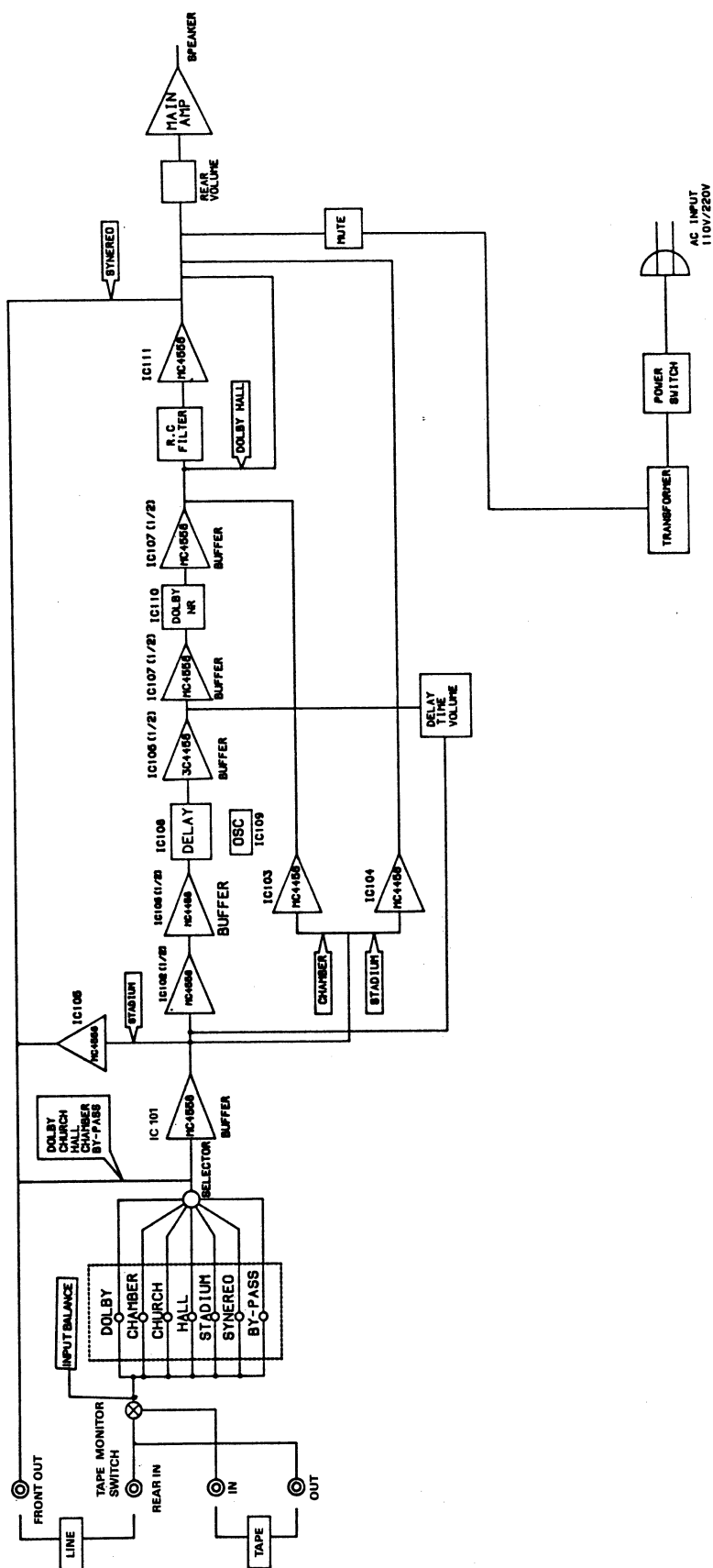
Others

Power Consumption	50W (min.10W max.75W)
Power Requirements;	
A: 120V 60Hz for American/Canadian version	
B: 120/220V, 60/50Hz for multi-voltage version (switchable)	
C: 220V 50Hz for general European version	
D: 220V 50Hz for Germanian/Italian version	
E: 240V 50Hz for U.K/Austalian version	
F: 220V 50Hz for Swiss/Scandinabian version	
Dimensions	(W)350×(H)70×(D)280mm (W)13.8×(H)2.8×(D)11.0 inch
Weight	7 lbs, 0.64 ozs (3.2kg)

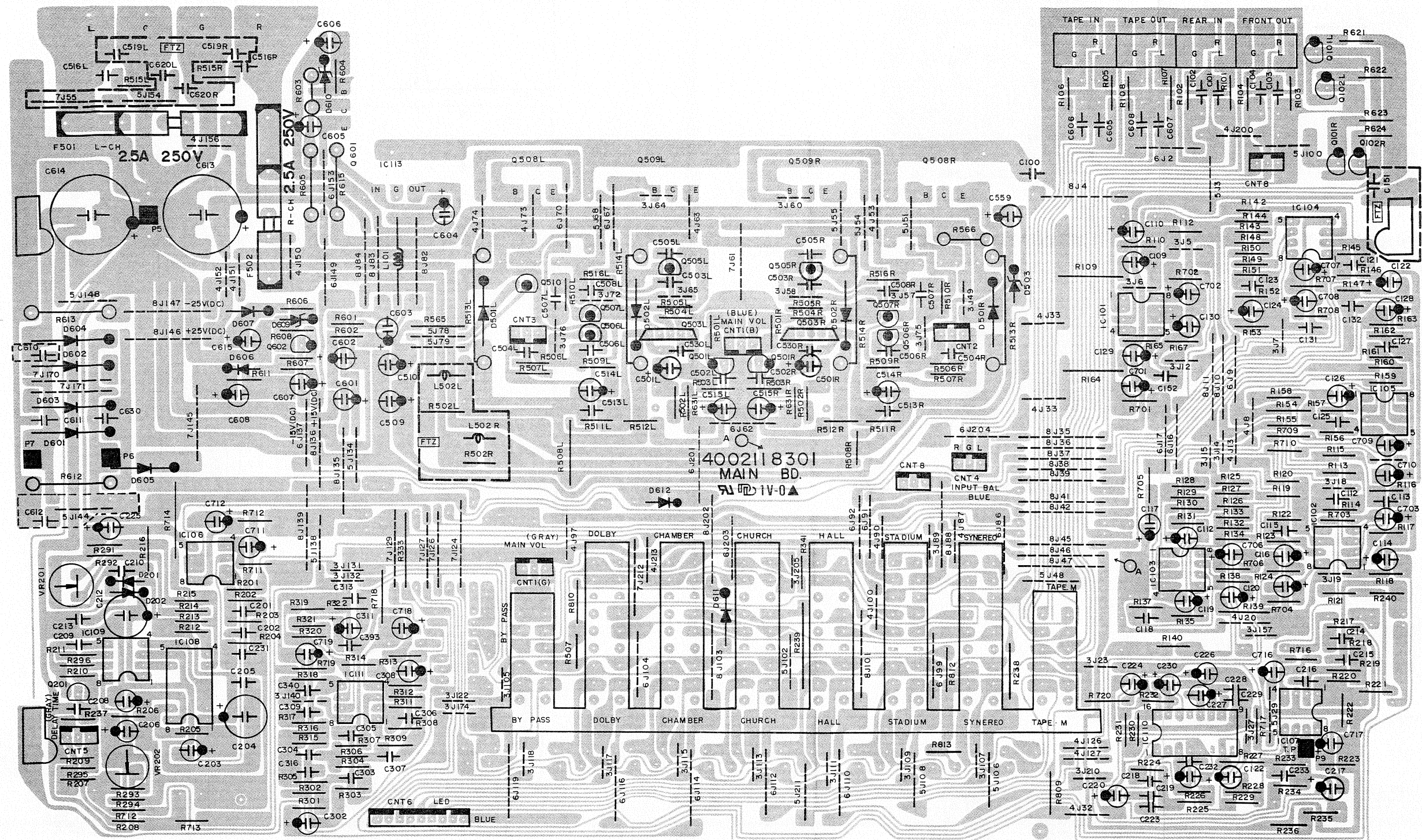
Note: Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the American (A) standard, and provides information on regional circuit modification through use of alternate schematic or wiring diagrams and information on regional component variations through use of parts list. Design and specifications subject to change without notice for improvement.

* Dolby Noise Reduction manufactured under licence from Dolby Laboratories Licensing Corporation.

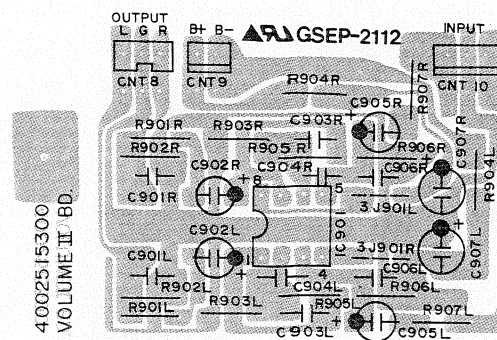
Block Diagram



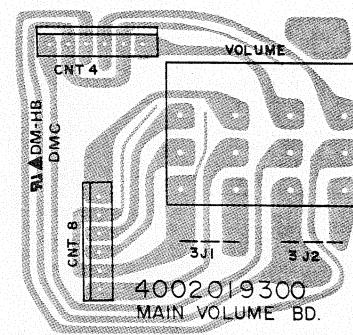
(TOP VIEW)



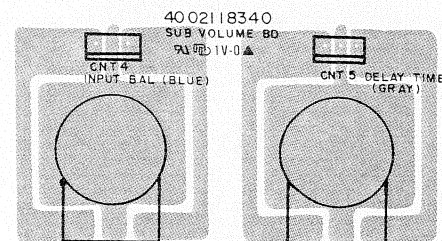
(TOP VIEW)



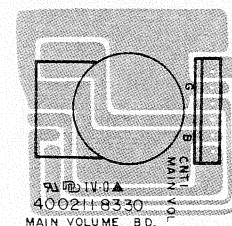
(TOP VIEW)



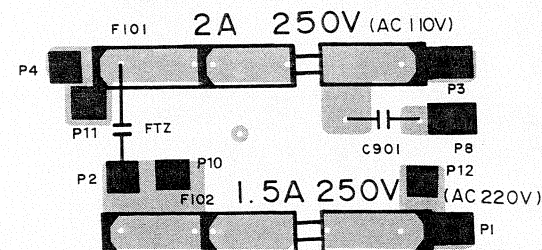
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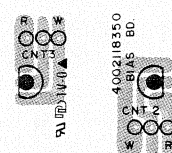
(TOP VIEW)



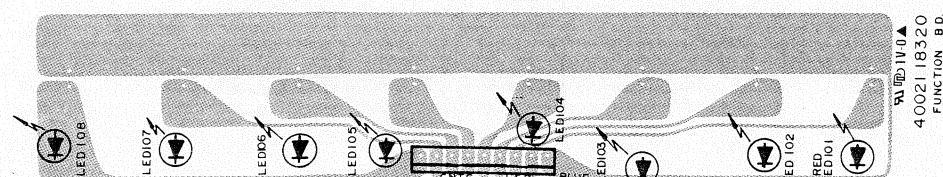
(TOP VIEW)



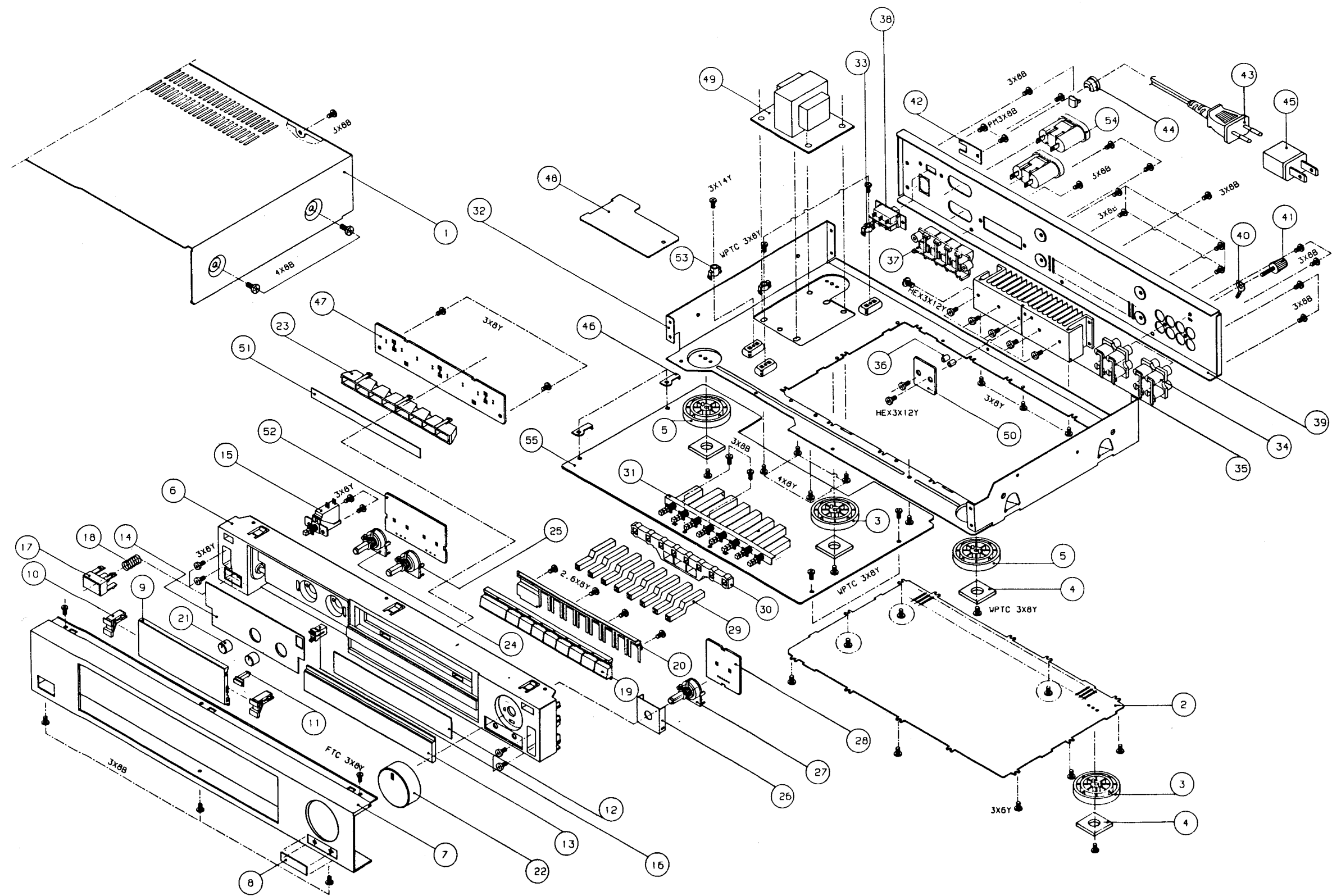
(TOP VIEW)



(TOP VIEW)



Exploded View



Electrical Parts List

PRODUCT SAFETY NOTICE: Products marked with Δ have special characteristics important to safety. If you replace any of these components, carefully read the product safety notice of this manual. Don't degraded the safety of the product through improper servicing.

Resistors & Capacitors tolerance, D: ±5%, J: ±0.5%, K: ±10%, M: ±20%, Z: +80%, -20%.

Ref. No.	Part No.	Description	Remark
Main Board 4002118301			
Capacitors			
C101-C104	3579101130	Ceramic 100pF 50V J	Real Silk on PCB is C605-C608
C105-C108	3579101130	Ceramic 100pF 50V J	
C109	3479222971	Electric SA 2.2μF 50V M	
C110	3479247971	Electric SA 4.7μF 50V M	
C111	.	Not used !	
C112/C113	3579470130	Ceramic 47pF 50V J	
C114/R116	3479247971	Electric SA 4.7μF 50V M	
C115	3579330130	Ceramic 33pF 50V J	
C117/C120	3479222971	Electric SA 2.2μF 50V M	
C118	3579100030	Ceramic 10pF 50V J	
C119	3479222041	Electric SA 22μF 25V M	
C121	3579680130	Ceramic 68pF 50V J	Near R713
C122/C124	3479222871	Electric SA 0.22μF 50V M	
C123	3579680130	Ceramic 68pF 50V J	
C125/C127	3579101130	Ceramic 100pF 50V J	
C126	3479222871	Electric SA 0.22μF 50V M	
C128	3470222871	Electric SA 0.22μF 50V M	
C129	3479222971	Electric SA 2.2μF 50V M	
C130	3479247971	Electric SA 4.7μF 50V M	
C131/C132	3679103120	Mylar 0.01μF 100V J	
C133-C151	.	Not used !	
C152	3579101130	Ceramic 100pF 50V J	D
C201	3679682120	Mylar 0.0068μF 100V J	
C202	3679103120	Mylar 0.01μF 100V J	
C203/C206	3479210971	Electric SA 1μF 50V M	
C204	3409222139	Electric SA 220μF 25V M	
C205	3579103530	Ceramic 0.01μF 50V Z	
C207	3479210131	Electric SA 100μF 16V M	
C208/C213	3579103530	Ceramic 0.01μF 50V Z	
C209	3579101130	Ceramic 100pF 50V J	
C210	3479247971	Electric SA 4.7μF 50V M	
C211	3579472530	Ceramic 4700pF 50V Z	
C212	3409222131	Electric SA 220μF 16V M	Near R713
C214	3679682120	Mylar 0.0068μF 100V J	
C215/C218	3679472120	Mylar 0.0047μF 100V J	
C216	3579471130	Ceramic 470pF 50V J	
C217	3479210971	Electric SA 1μF 50V M	
C219	3679273120	Mylar 0.027μF 100V J	
C220/C224	3479247031	Electric SA 47μF 16V M	
C221/C222	3479210971	Electric SA 1μF 50V M	
C223	3679562120	Mylar 0.0056μF 100V J	
C225	3479210971	Electric SA 1μF 50V M	
C226	3479233871	Electric SA 0.33μF 50V M	
C227	3479210061	Electric SA 10μF 35V M	Near R713
C228	3579103530	Ceramic 0.01μF 50V Z	
C229	3579473530	Ceramic 0.047μF 50V Z	
C230	3479210871	Electric SA 0.1μF 50V M	
C231	.	Not used !	
C232/C233	3579471130	Ceramic 470pF 50V J	
C301	.	Not used !	Near R713
C302	3479222971	Electric SA 2.2μF 50V M	
C303	3679473120	Mylar 0.047μF 100V J	
C304	3679273120	Mylar 0.027μF 100V J	
C305	3679562120	Mylar 5600pF 100V J	

Ref. No.	Part No.	Description			Remark
C306	3579330130	Ceramic	33pF	50V	J
C307	3679333120	Mylar	0.033μF	100V	J
C308/ C311	3479210971	Electric SA	1μF	50V	M
C309	3579681230	Ceramic	680pF	50V	K
C310	3579102530	Ceramic	1000pF	50V	Z
C312	3679822120	Mylar	8200pF	100V	J
C313/ C314	3679103120	Mylar	0.01μF	100V	J
C315/ C316	3679273120	Mylar	0.027μF	100V	J
C501	3479222971	Electric SA	22μF	50V	M
C502	3579680130	Ceramic	68pF	50V	J
C503L/R	3509821230	Ceramic	820pF	50V	K
C504L/R	3679473120	Mylar	470pF	50V	K
C505L/R	3569220210	Ceramic	20pF	50V	K
C506L/R	3579221130	Ceramic	220pF	50V	J
C507L/R	3679473120	Mylar	0.047μF	100V	J
C508L/R	3579221130	Ceramic	220pF	50V	J
C509/ C510	3479222071	Electric SA	22μF	50V	M
C511/ C512	.	Not used !			
C513L/R	3579100030	Ceramic	10pF	50V	J
C515	3479222041	Electric SA	22μF	25V	M
C516	3679473120	Mylar	0.047μF	100V	J
C519L/R	3579103530	Ceramic	0.01μF	50V	Z
C520- C529	.	Not used !			
C530L/R	3579271530	Ceramic	270pF	50V	Z
C531- C558	.	Not used !			
C559	3409247131	Electric SA	470μF	16V	M
C601	3479222041	Electric SA	22μF	25V	M
C602	3409210192	Electric SA	100μF	16V	M
C603	3479247031	Electric SA	47μF	16V	M
C604	3479222061	Electric SA	22μF	35V	M
C605/ C606	3479247031	Electric SA	47μF	16V	M
C607	3479222071	Electric SA	22μF	50V	M
C608	3479210071	Electric SA	10μF	50V	M
C609/ C612	3679473120	Mylar	0.047μF	100V	J
C611	.	Not used !			
C613/ C614	3409222131	Electric SA	2200μF	35V	M
C615/ C619	.	Not used !			
C620L/R	3579473130	Ceramic	0.047μF	50V	J
Connectors					
CNT1(G)	4428517610	Plug 3P			
CNT1(B)	4428517610	Plug 3P			
CNT2	4358503104	Plug 3P			
CNT3	4358503104	Plug 3P			
CNT4	4358503301	Plug 3P			
CNT5	4358503103	Plug 3P			
CNT6	4428518210	Plug 9P			
Coils					
L101	2648601010	Inductor 2.2μH			
L502L/R	2648001490	Inductor 0.5μH			
Diodes					
D201/ D202	2058306101	1N4148			

Ref. No.	Part No.	Description	Remark
D501/ D502	2258106100	1N4002	
D601	2058100105	1N5402	
D602/ D603	2058100105	1N5402	
D604	2058100105	1N5402	
D605/ D607	2258106100	1N4002	
D606	2058306101	1N4148	
D608	.	Not used !	
D609	2058599116	Zener UZ 12BM	
D610	2058599109	Zener UZ 15BM	
D611/ D612	2058306101	1N4148	
ICs			
IC101-IC107	2168000114	MC4558C	
IC108	2168010105	MN3008	
IC109	2168010102	MN3101	
IC110	2168012100	NE546B	
IC111	2168000114	MC4558	
IC113	2168601105	GD7815	
Fuses			
F501/ F502	5508402535	250V 2.5A	
Resistors: All resistors are 1/5W carbon film $\pm 5\%$ tolerance, unless specified otherwise. M. is metal film, M.O. is metal oxide and C. is cement type.			
R101-R109	3069102970	1k Ω	
R110/ R112	3069104970	100k Ω	
R111	.	Not used !	
R113/ R115	3069273970	27k Ω	
R114/ R116	3069913970	91k Ω	
R117/ R123	3069561970	560 Ω	
R118	3069104970	100k Ω	
R119- R121	3069273970	27k Ω	
R122	3069392970	39k Ω	
R124/ R136	3069104970	100k Ω	
R125/ R127	3069273970	27k Ω	
R126/ R134	3069105970	1M Ω	
R128/ R129	3069472970	4.7k Ω	
R130/ R138	3069561970	560 Ω	
R131/ R139	3069104970	100k Ω	
R132/ R133	3069273970	27k Ω	
R135	3069103970	10k Ω	
R137	3069223970	22k Ω	
R140	3069122970	1.2k Ω	
R141	.	Not used !	
R142/ R143	3069332970	33k Ω	
R144/ R150	3069103970	10k Ω	
R145/ R151	3069333970	33k Ω	
R146	3069561970	560 Ω	
R147/ R153	3069473970	47k Ω	
R148/ R149	3069333970	33k Ω	
R152	3069564970	560k Ω	
R154/ R160	3069273970	27k Ω	
R155	3069563970	56k Ω	
R156/ R161	3069183970	18k Ω	
R157/ R162	3069561970	560 Ω	
R158	3069473970	47k Ω	
R159	3069563970	56k Ω	

Ref. No.	Part No.	Description	Remark
R163	3069473970	47kΩ	Near R713
R164	3069102970	1kΩ	
R165-R167	3069104970	100kΩ	
R201/R204	3069242970	2.4kΩ	
R202	3069182970	1.8kΩ	
R203/R209	3069123970	12kΩ	
R205	3069102970	1kΩ	
R206	3069104970	100kΩ	
R207/R208	3069182970	1.8kΩ	
R210	3069563970	56kΩ	
R211	3069822970	8.2kΩ	
R212/R213	3069104970	100kΩ	Near R713
R214/R215	3069562970	5.6kΩ	
R216	3069104970	100kΩ	
R217-R219	3069622970	8.2kΩ	
R220	3069153970	15kΩ	
R221	3069103970	10kΩ	
R222	3069242970	2.4kΩ	
R223	3069911970	910Ω	
R224	3069473970	47kΩ	
R225	3069332970	3.3kΩ	
R226/R230	3069102970	1kΩ	Near R713
R227	3069333970	33kΩ	
R228	3069683970	68kΩ	
R229	3069203970	20kΩ	
R231	3069184970	180kΩ	
R232	3069274970	270kΩ	
R233	3069203970	20kΩ	
R234	3069181970	180Ω	
R235	3069242970	2.4kΩ	
R236	3069182970	1.8kΩ	
R237	.	Not used !	
R238/R239	3069102970	1kΩ	Near R713
R240	3069203970	20kΩ	
R293	3069562970	5.6kΩ	
R294	3069512970	5.1kΩ	
R301/R302	3069225970	2.2MΩ	
R303/R304	3069682970	6.8kΩ	
R305	3069332970	3.3kΩ	
R306	3069682970	6.8kΩ	
R307	3069103970	10kΩ	
R308/R311	3069682970	6.8kΩ	
R309	3069563970	56kΩ	
R310	.	Not used !	Near R713
R312	3069564970	560kΩ	
R313/R322	3069104970	100kΩ	
R314	3069223970	22kΩ	
R315/R316	3069563970	56kΩ	
R317	3069561970	560Ω	
R318	3069103970	10kΩ	
R319/R320	3069223970	22kΩ	
R321	3069102970	1kΩ	
R323-R339	.	Not used !	
R340/R341	3069123970	12kΩ	
R501L/R	3069471970	470Ω	Near R713
R502L/R	3069471970	470Ω	
R503L/R	3069154970	150kΩ	
R504L/R	3069103970	10kΩ	

Ref. No.	Part No.	Description	Remark
R505L/R	3069331970	330Ω	
R506L/R	3069392970	3.9kΩ	
R507L/R	3069152970	1.5kΩ	
R508L/R	3069152970	1.5kΩ	
R509L/R	3069472970	4.7kΩ	
R510L/R	3069271970	270Ω	
R511L/R	3069683970	68kΩ	
R512L/R	3069471970	470Ω	
R513L/R	3069278582	M.O., 0.27kΩ 2W	
R514L/R	3069278582	M.O., 0.27kΩ 2W	
R515L/R	3069100970	10Ω	
R565	3069333970	33kΩ	
R566	3009102970	M., 1kΩ 1/4W	
R601/R602	3009100970	10Ω	
R603	3009152970	M., 1.5kΩ 1/4W	
R604	3069101970	100Ω	
R605	3039339472	M.O., 3.3kΩ 1W	
R606	3069152970	1.5kΩ	
R607/R611	3069103970	10kΩ	
R608	3069823970	82kΩ	
R609	.	Not used !	
R610	3069473970	47Ω	
R612/R613	3039152472	M.O., 1.5Ω 1W	
R614	.	Not used !	
R615	3039339472	3.3kΩ 1W	
R810	3039105970	1kΩ	
R811	.	Not used !	
R812	3039473970	47kΩ	
R813	3039472970	4.7kΩ	

Transistors

Q101L/R	2208606104	KTC 1815Y	
Q102L/R	2208606104	KTC 1815Y	
Q201	2018207106	2SK 117Y	
Q501L/R	2008610102	2SD 1302	
Q502L/R	2008206105	KTA 970BL	
Q503L/R	2008206105	KTA 970BL	
Q504	2008609102	See Bias TR Board	
Q505L/R	2008609102	MPS A06	
Q506L/R	2008609102	MPS A06	
Q507L/R	2008209102	MPS A56	
Q508L/R	2028406123	2SD 2059Y	
Q509L/R	2028106109	2SB 1367Y	
Q510	2008609102	MPS A06	
Q601	2028406124	2SB 1366Y	
Q602	2208206105	KTA 1015Y	

Fuse Board 4002118310

Capacitors

C901	3549472410	Ceramic 0.0047μF 400V K	
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Fuses

F101 △	5508452035	2.5A 250V	
F102 △	5508302335	1.6A 250V	

Ref. No.	Part No.	Description	Remark
Function Board 4002118320			
LEDs			
L101	2308220130	SLV 56URC3	
L102-L108	2308220507	SLV 56DC3	
Connector			
CNT6	4358509120	Ass'y 9P to Main Board	

Bias Board 4002118350

Transistor

Q504L/R	2008609102	MPS A06	
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Connectors

CNT2/CNT3	4358503104	Ass'y 3P to Main Board 100mm	
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Sub Volume Board 4002118340

Connectors

CNT4	4358503301	Ass'y 3P to Main Board 300mm	
CNT5	4358503103	Ass'y 3P to Main Board 100mm	

Volume II Board 4002515300

Capacitors

C901L/R	3679182170	Mylar 0.0018μF 120V J	
C902L/R	3479210061	Electric SA 10μF 35V M	
C903L/R	3579470120	Ceramic 47pF 50V J	
C904L/R	3579331130	Ceramic 330pF 50V J	
C905L/R	3479247971	Electric SA 4.7μF 50V M	
C906L/R	3579470120	Ceramic 47pF 50V J	
C907L/R	3479247041	Electric SA 47μF 25V M	

Connectors

CNT8	4428517610	Ass'y 3P to Volume Board	
CNT9	4428522210	Ass'y 2P to Main 8J10/11	
CNT10	4428517610	Ass'y 3P to Main B'D	

Main Volume Board 4002019300

Connectors

CNT1	4358506240	Ass'y 3P to Main B'D CNT1	
CNT8	4358506240	Ass'y 6P, 3P to Main B'D CNT8 3P to Volume B'D CNT10	

Resistors

R901L/R	3069471970	470Ω	
R902L/R	3069104970	100kΩ	
R903L/R	3069271970	270Ω	

Ref. No.	Part No.	Description	Remark
R904L/R	3069101970	100Ω	
R905L/R	3069152970	1.5kΩ	
R906L/R	3069473970	47kΩ	
R907L/R	3069102970	1kΩ	
Others			
.	2828058107	Power Transformer	Domestic
.	2828067801	Power Transformer	A
.	2828067301	Power Transformer	B,C,D,F
.	2828069101	Power Transformer	E

Note;

Mechanical Parts List

No.	Part No.	Description	Q'ty	Remark
1	046122017311	Cabinet Top, Black	1	
2	6123406410	Cover Bottom, Gray	1	
3	6035101420	Foot Base, Black	2	Domestic, A
(3)	.	Not used !	0	B,C,D,E,F
4	6725002110	Cushion Foot, Black	4	
5	046035101421	Foot Base, Gold	2	Domestic, A
(5)	046035101421	Foot Base, Gold	4	B,C,D,E,F
6	048521005131	Body Front	1	
7	048602016311	Panel Front, Black	1	
8	048535019011	Badge, Sherwood	1	
(8)	048535019021	Badge	1	Domestic
9	048605000113	Door, Black	1	
10	6045006310	Base Door, Black	2	
11	6305004210	Shaft Locker	1	
12	048533005713	Inlay Function	1	
13	8553008210	Window	1	
14	048625003011	Decoration Plate	1	
15	4628044410	Switch Push, Power Main	1	
16	7328000110	Locker Door	1	
17	048545048211	Button Power, Main Black	1	
18	6555004380	Spring Button, Main	1	
19	048543016512	Button Function	1	
20	056553800210	Ass'y Spring Plate	1	
21	048545052211	Knob Rotary	2	
22	8645009610	Knob Rotary, Main Volume	1	
23	6043006610	Holder LED	1	
24	3208049610	VR 250KSW	1	
25	3208053210	VR 50KB	1	
26	6165121210	Shield VR	1	
27	3208055710	VR 50KA×4	1	
28	4002118330	PCB Main Volume	1	
29	6305004510	Shaft Button	1	
30	6333000210	Guide Shaft	1	
31	4628052210	Switch Push, 8Key	1	
32	6121602810	Chassis Main	1	
33	6705004210	Spacer	2	
34	4438101910	RCA Jack 4P, Line/Tape	2	
35	7503010310	Heatsink Power	1	
36	7015003110	Bussing	2	
37	4408000910	Speaker Terminal	1	
38	4618000410	Switch Slide	1	
39	046102023811	Chassis Back, Black	1	Domestic
(39)	046102023842	Chassis Back, Black	1	for U.K
(39)	04853503821	Chassis Back, Black	1	A
(39)	65180003831	Chassis Back, Black	1	B
(39)	43080003841	Chassis Back, Black	1	C
(39)	44481023851	Chassis Back, Black	1	D
(39)	04853503861	Chassis Back, Black	1	E
(39)	04853503871	Chassis Back, Black	1	F
40	4465100110	Ground Terminal	1	Domestic
41	4465100210	Ground Screw	1	Domestic
42	6515000630	Holder Voltage	1	Domestic
43	4308000810	Cord AC Power, Black	1	
(43)	4338000210	Cord AC Power, Black	1	for U.K
(43)	4308000610	Cord AC Power, Black	1	E
(43)	4308000430	Cord AC Power, Black	1	C,F
(43)	4308000610	Cord AC Power, Black	1	E
(43)	4308003910	Cord AC Power, Black	1	A,B
44	6513000310	Stopper Cord AC, Black	1	Domestic
(44)	6518000111	Stopper Cord AC, Black	1	for U.K,F
(44)	6513000210	Stopper Cord AC, Black	1	E
(44)	6518000111	Stopper Cord AC, Black	1	A,B,C,D
45	4328300310	Adapter AC, Black	1	Domestic
46	4235005010	Ground Plate	2	

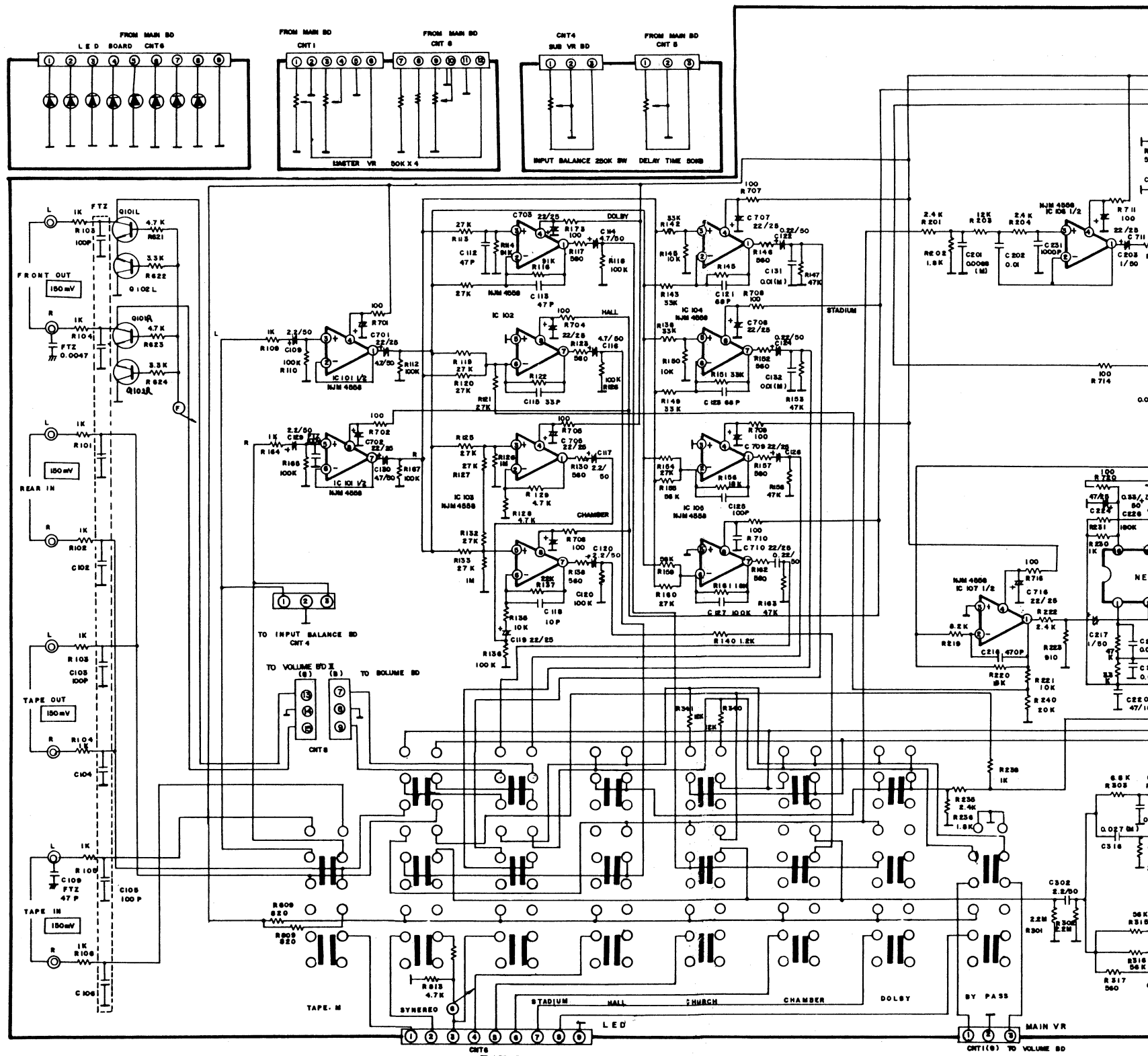
No.	Part No.	Description	Q'ty	Remark
47	4002118320	P.C.Board Function	1	
48	4002118310	P.C.Board Fuse	1	
49	2828058107	Power Transformer	1	
50	4002118350	P.C. Board Bias	1	
51	8535020120	Diffuser Function	1	
52	4002118340	P.C Board SUB Volume	1	
53	6705004210	Spacer	1	
54	4448100410	Outlet AC, Black	2	Domestic
(54)	4448102110	Outlet AC, Black	1	A,B
55	4002118300	P.C. Board Main	1	

A

B

C

D

Schematic Diagram
ES-1280

Notes 1.

2.

CAUTION

C

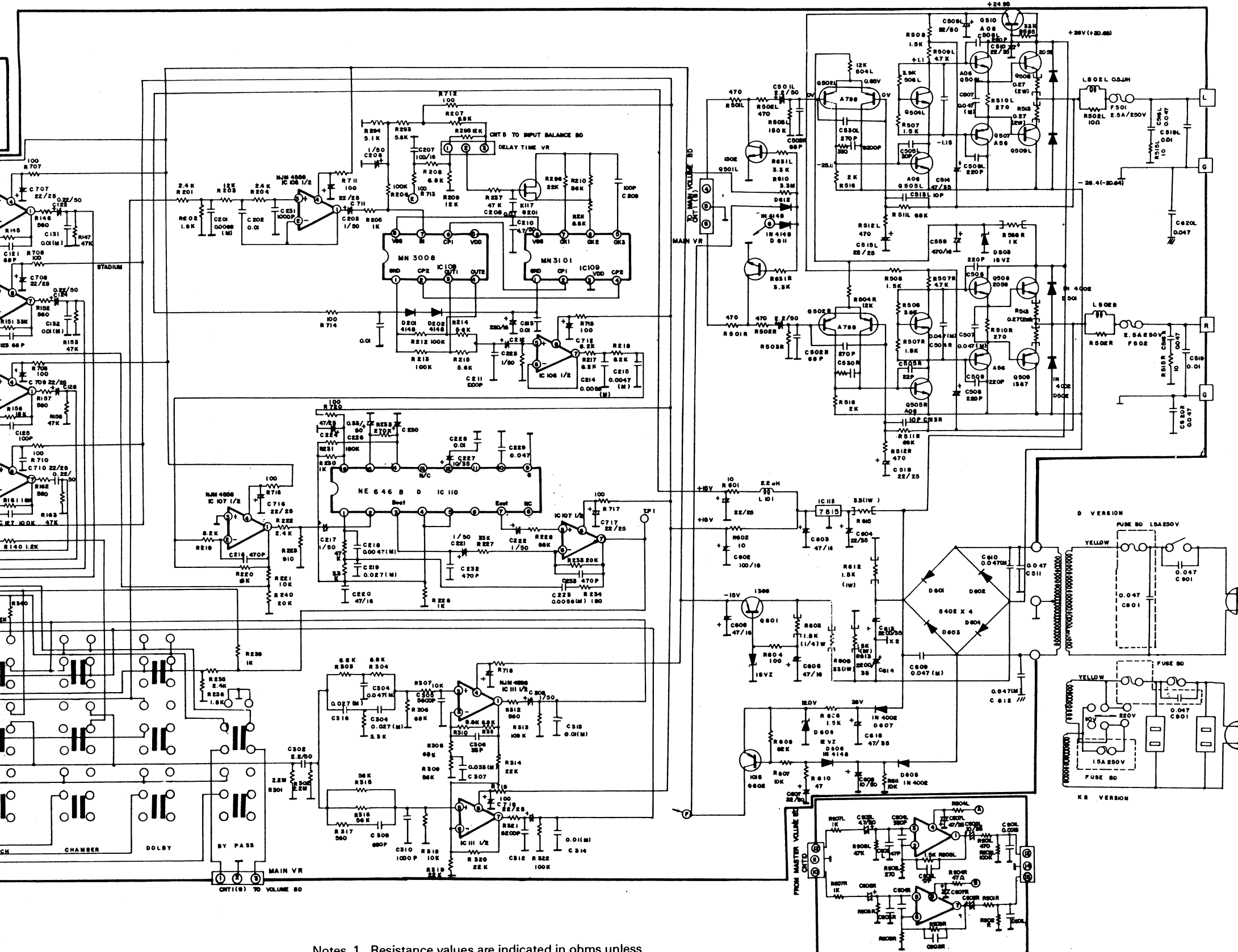
D

E

F

G

Schematic Diagram ES-1280



- Notes 1. Resistance values are indicated in ohms unless otherwise specified (K=1,000, M=1,000,000).
2. Capacitance values are shown in microfarads unless otherwise noted (P=micro-micro farads).

CAUTION: Safety precautions to be followed during servicing
1) Since those parts marked with Δ are critical parts for safety, use the one described in parts list.
2) Before returning the receiver to the customer, make appropriate leakage current or resistance measurements to determine that exposed parts are properly insulated from the supply circuit.

Precautions to be followed during servicing
of those parts marked with $\triangle$ are
as follows. For safety, use the one described in parts

re returning the receiver to the customer, make appropriate leakage current or resistance measurements to determine that exposed parts are properly isolated from the supply circuit.

